

Assessment Schedule – 2005**Human Biology: Describe how humans respond to pathogens (90176)****Evidence Statement**

Q	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	Disease-causing (micro-) organisms / bacteria / fungi / virus.		
1(b)	<p><i>Describe symptoms.</i> <i>Any TWO of:</i></p> <ul style="list-style-type: none"> • Inflammation / swelling • Fever / increased temperature • Get a / develop headache • Loss of appetite • Feel / increased thirst • Mucus / secretion (eg runny nose). 		
2(a)	<p><i>Describes the body's response once pathogens are in the blood.</i> <i>Any ONE of:</i></p> <ul style="list-style-type: none"> • White blood cells (leucocytes / lymphocytes or phagocytes) destroy pathogens / engulf pathogens / make antibodies. • The body / WBC / lymphocytes make antibodies. • The phagocytes / WBC engulf pathogens. <p>(NOT Blood clotting seals wound – this is irrelevant.)</p>	<p><i>Identifies pathogen as foreign, and explains the body's response mechanisms once pathogens are in the blood.</i></p> <ul style="list-style-type: none"> • WBC / lymphocytes recognise pathogen as foreign (to body) → (specific) antibody production : WBC / phagocytes engulf pathogens / antibody complex. <p>OR</p> <ul style="list-style-type: none"> • Body produces or releases histamines to trigger more WBC to the site of infection increasing speed / rate of WBC / phagocytes engulf pathogens. 	
2(b)	<p><i>Describe why lymph nodes swell.</i> <i>ONE idea of:</i></p> <ul style="list-style-type: none"> • More lymphocytes / white blood cells made to fight the disease. • Pathogens are trapped in nodes / glands. 	<p><i>Identifies site of infection to closest lymph node.</i> Linked to: <i>Increased production of lymphocytes / WBC / increased engulfing of WBC at nodes.</i></p> <p>Eg Infection from hand travels along lymph vessels to lymph nodes / glands → make more lymphocytes and more phagocytes to engulf bacteria / pathogens.</p>	

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2(c)	<p><i>Identify or describe need for tetanus vaccine.</i></p> <p>ONE idea of:</p> <p>John at risk (of getting tetanus) as</p> <ul style="list-style-type: none"> • less antibodies over time • body runs out of antibodies • antibodies broken down • vaccine provides new source of antibodies. 	<p><i>Identifies John at risk (of getting tetanus) due to nature of wound : vaccine provides ready made / instant antibodies.</i></p> <p>Eg</p> <p>John at risk (of tetanus) as (ONE of)</p> <ul style="list-style-type: none"> • less antibodies over time • body runs out of antibodies • antibodies broken down. <p>→ vaccine provides new source of ready-made antibodies / only passive immunity as body receives ready-made antibodies. → More vaccines required as immunity wears off.</p> <p>OR</p> <p>John at risk (of getting tetanus) due to nature of wound / wound type / and he may have low antibodies so needs vaccine to provide ready-made / instant antibodies.</p>	
3(a)	<p><i>Describes active immunity.</i></p> <p>Eg</p> <p>Body receives a vaccine containing dead / weakened pathogens.</p> <p>OR</p> <p><i>Identifies active immunity.</i></p> <p>Eg</p> <p>Body can make antibodies to fight polio.</p>	<p><i>Identify and explain active immunity.</i></p> <p>Body receives a vaccine containing dead / weakened pathogens : body stimulated to make its own antibodies against polio.</p>	
3(b)	<p><i>Identify or describe natural / active immunity acquired by suffering measles.</i></p> <p>Identifies child now has (own) antibodies against disease / measles.</p> <p>OR</p> <p>Describes that child's body has produced (own) antibodies or memory cells against measles / disease.</p>	<p><i>Identify and explain natural / active immunity acquired by suffering measles.</i></p> <p>Body has suffered from measles and body responded by making (own) antibodies and memory cells (or remembers the antigen/organism) : if measles pathogen re-enters body the body is stimulated to make antibodies as a response to combat infection.</p>	

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4	<p><i>Describes how newborn babies are immune.</i></p> <ul style="list-style-type: none"> Baby before birth (foetus) receives mother's antibodies across placenta / milk. <p>OR</p> <ul style="list-style-type: none"> Baby gets antibodies in the breast milk. 	<p><i>Describes where antibodies come from and explains how newborn babies are immune.</i></p> <p>Any TWO ideas below linked together that indicate that babies have high level of antibodies against disease / natural immunity.</p> <p>Eg</p> <ul style="list-style-type: none"> Baby before birth (foetus) receives mothers antibodies across placenta. Baby gets antibodies in breast milk. <p>AND</p> <ul style="list-style-type: none"> Baby born with same protection against disease as mother. 	<p><i>Discuss with linked ideas how newborn babies are immune.</i></p> <p>All ideas needed:</p> <p>Baby before birth (foetus) receives mother's antibodies across placenta : baby born with same protection against diseases as mother : baby continues to get antibodies in breast milk.</p> <p>AND</p> <p>Idea that after a few months baby starts to make its own antibodies.</p>
5	<p><i>Idea of pathogens being killed / destroyed / cannot reproduce.</i></p> <p>AND</p> <p><i>Identifies THREE features from:</i></p> <ul style="list-style-type: none"> tear glands in eyes make / secrete tears. mouth – saliva / contains enzymes. nose – mucous traps pathogens. stomach – (HCl) acid. genital openings – acid conditions in vagina not suitable for pathogens. 	<p><i>Describes with linked explanation how body deals with pathogens that have entered.</i></p> <p><i>As for Achievement, and any THREE of the following ideas:</i></p> <ul style="list-style-type: none"> tears contain lysozyme, a substance which kills bacteria / salt in tears is poisonous pathogens swallowed and destroyed by stomach acid cilia move mucus with trapped pathogens up, and are swallowed / coughed out acid breaks down pathogen / unable to reproduce mucous (vagina / urethra) traps pathogens / acid conditions in vagina not suitable for pathogens → pathogens can't reproduce. <p>OR</p> <ul style="list-style-type: none"> males have long urethra → (phagocytes / antibodies destroy) bacteria before reaching bladder / bacteria are destroyed before reaching bladder. <p>For Merit, answer must imply MORE than just killing pathogen.</p>	<p><i>Candidates discuss fact most natural openings have chemical defences to deal with pathogens. Need to link chemicals attack pathogens which can't multiply, therefore not pathogenic.</i></p> <p><i>As for Merit PLUS idea that:</i></p> <p>Cell wall destroyed / damaged / can't work : bacteria cannot reproduce / can't multiply : can't cause disease. (Must get the last point for Excellence)</p>

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
<p>FIVE opportunities answered at Achievement or higher.</p> <p>$5 \times A$</p>	<p>EIGHT opportunities answered with THREE at Merit level or higher, and FIVE at Achievement level.</p> <p>$3 \times M \text{ plus } 5 \times A$</p>	<p>NINE opportunities answered with ONE at Excellence level, THREE at Merit level and FIVE at Achievement level.</p> <p>$1 \times E \text{ plus } 3 \times M \text{ plus } 5 \times A$</p>